EPA

Purity Oil Superfund Site

United States Environmental Protection Agency, Region 9, San Francisco

MALAGA, CA

MARCH 1993

PURITY OIL SALES SUPERFUND SITE
EPA SELECTS CLEAN-UP PLAN FOR SOIL

The United States Environmental Protection Agency (EPA), has approved a plan to clean up contaminated soil at the Purity Oil Sales Superfund site in Malaga, California. (Figure 1). On September 30, 1992, EPA signed a Record of Decision (ROD) selecting treatment of soil from a depth of 14 feet to the water table with Soil Vapor Extraction (SVE), excavating a 25-foot trench around the site and filling the trench with bentonite and soil to form a slurry wall, and covering the site with a multi-layer cap.

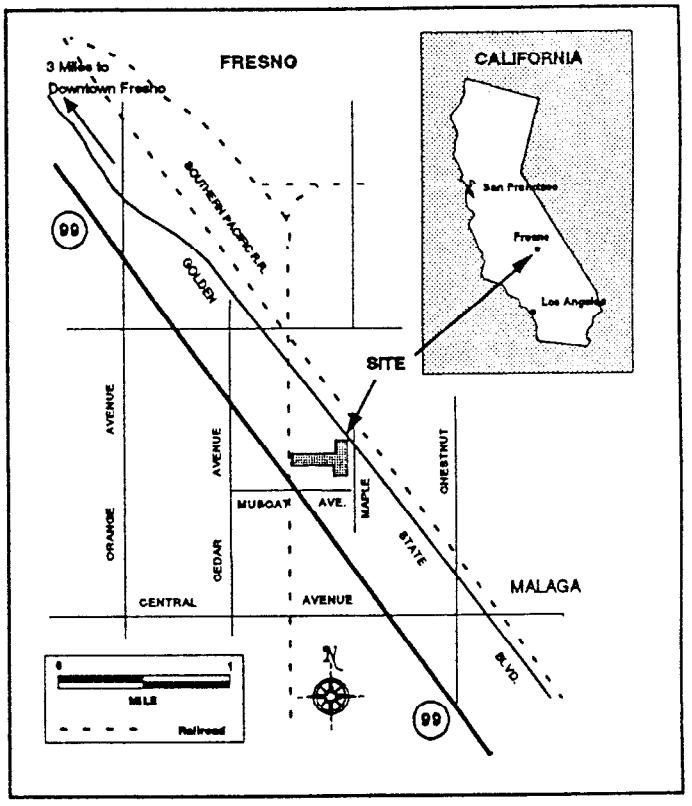


Figure 1: Site Location Map

SITE BACKGROUND

The seven-acre Purity Oil Sales site is located approximately one-half mile south of the Fresno city limits, in the township of Malaga. From 1934 until 1975, used oil was taken to the site for re-refining from entities such as service stations, automobile dealers, truck stops, manufacturers, utilities, military facilities, and state and local governments. The oil and refining process by-products were stored in ponds and storage tanks and were disposed of on-site in sludge pits. The facility ceased operation in the mid-1970s and the waste pits were filled with demolition debris.

State and federal investigations, conducted during the early 1980s, indicated that on-site soil and groundwater contained compounds that might pose a threat to human health and the environment. EPA included the site on the National Priorities List in December 1982, making it eligible for further investigation and cleanup under the federal Superfund program.

Between 1984 and 1986, the California Department of Toxic Substances Control (formerly the Department of Health Services) investigated the site. In 1986, EPA became the lead agency for the site and conducted additional investigative work from 1986 to 1992.

EPA issued a Remedial Investigation Report in October 1988. A Feasibility Study and a Proposed Plan for Soil and Groundwater were issued in April 1989. The Regional Administrator signed a Record of Decision for the Groundwater and Tanks Operable Unit on September 26, 1989.

EPA conducted two remedial actions in accor-

dance with the ROD. In October 1991, seven large above-ground steel tanks and their contents were removed from the site. In March 1992, private well users downgradient of the site were connected to either the Malaga County Water District or the City of Fresno water system.

EPA issued a Unilateral Administrative Order on September 30, 1991 to nine potentially responsible parties (PRPs) for design and construction of a groundwater extraction, treatment and disposal system.

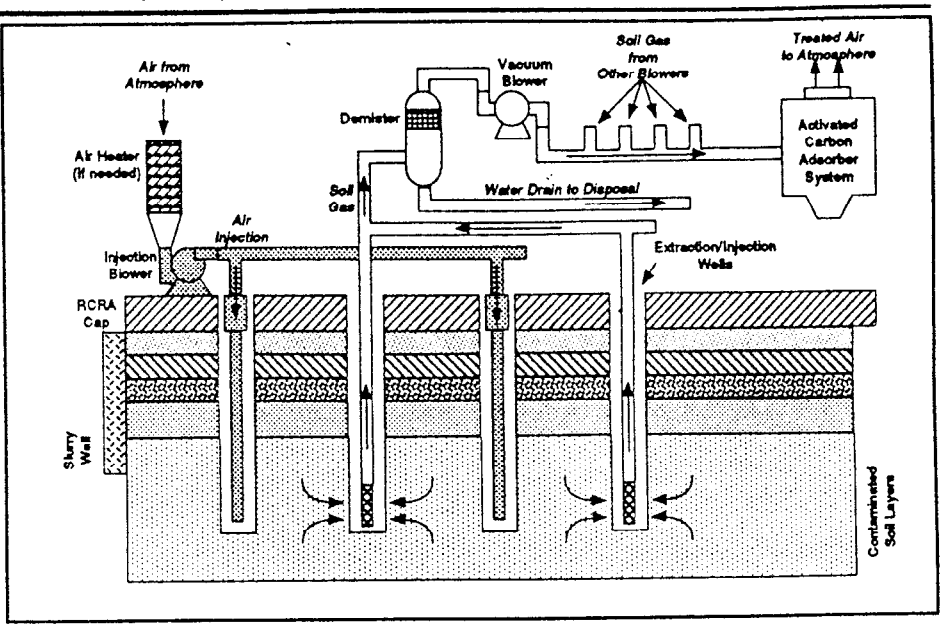


Figure 2: Soil Vapor Extraction System

A Revised Proposed Plan for Soil, including EPA's preferred alternative, was issued in June 1992. A public comment period was held from June 8, 1992 through July 10, 1992. A request for an extension to the comment period was granted, extending the comment period to August 10, 1992.

Groundwater Contaminants

Groundwater at the site is contaminated with volatile organic compounds (VOCs), semi-volatile organic compounds, iron and manganese. Nine VOCs including trichloroethylene, 1,2-Dichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, benzene, vinyl chloride, carbon tetrachloride, cis-1,2-DCE and trans-1,2-DCE exceed federal and state drinking water standards. Iron and manganese exceed federal standards. The contaminated groundwater plume extends approximately 2,800 feet northwest of the site and is 800 feet wide and over 100 feet deep (ranging from 50 feet to 150 feet below the surface).

Soil Contaminants

The soil at the site contains high levels of lead and certain organic compounds. The buried waste contains benzene, toluene, polyaromatic hydrocarbons (PAHs), methylene chloride, phthalates, acetone, numerous solvents, metals, and other compounds. pour Research water on the crops Nuclear By Products

The North Central Canal flows along the southern boundary of the site. Sediments along the slopes of the canal are contaminated with high concentrations of lead.

THE SELECTED CLEANUP PLAN

The selected plan to address soil contamination includes:

- Treat soils from 14 feet to the water table with SVE
- Excavate a trench 25 feet deep around the site and fill with bentonite and soil to form a slurry wall
- Cover the site with a multi-layer cap
- Construct a retaining wall to support the cap
- Enclose the North Central Canal in a reinforced concrete pipe

The remedy is estimated to take nine years to design, construct and operate. The total project cost is estimated to be $36 million.

Soil Vapor Extraction (Figure 2) is a process in which organic contaminants are volatilized from the soil, using a series of on-site air injection and extraction wells. The extracted Volatile Organic Compounds (VOCs) are then treated by carbon

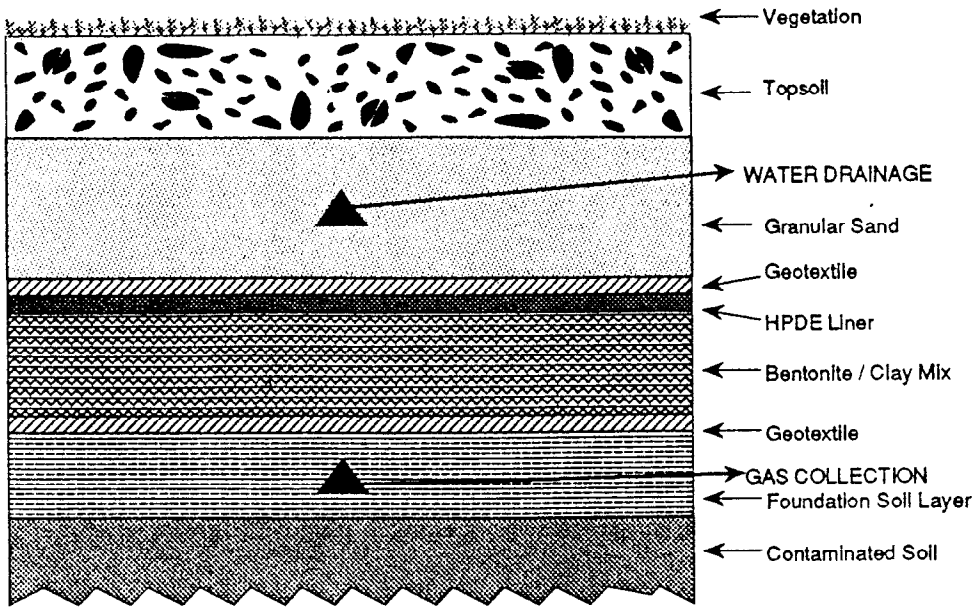


Figure 3: RCRA Equivalent CAP

adsorption prior to discharge to the air. Carbon adsorption is a treatment process where volatilized contaminants are forced through tanks containing activated carbon, a specially treated material that attracts the contaminants. The contaminants cling to the carbon, and the air leaving the system will meet air quality standards.

A RCRA equivalent cap (Figure 3) satisfies the requirements under the Resource Conservation and Recovery Act (RCRA) for closure of a hazardous waste landfill. Capping prevents direct human contact with the contaminants and also prevents continued leaching of soil contaminants into groundwater.

A slurry wall acts as an underground barrier, surrounding the contaminated soil. The North Central Canal will be enclosed in a reinforced concrete pipe to prevent leaching of canal water into the soil.

Soil from 0-14 feet is contaminated with oil and grease, which would greatly inhibit the effectiveness of SVE wells. Therefore, SVE wells will treat soil from 14 feet to the water table. EPA anticipates that approximately 25% of the VOCs from the upper layers of soil will be drawn down to the lower layers by the action of the SVE system and be treated. EPA estimates that 58 wells would be required to cover the site.

HOW EPA SELECTED THE CLEAN-UP PLAN

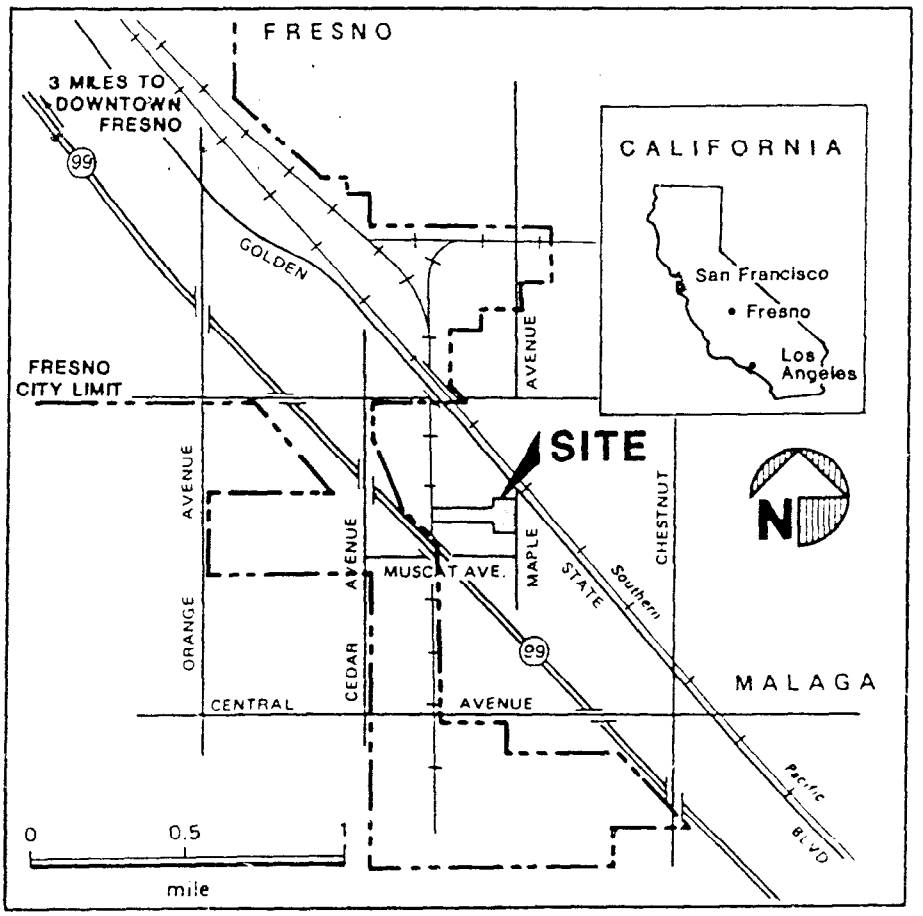
EPA selected the methods for addressing soil contamination based on nine criteria, or standards, including overall protection of human health and the environment, compliance with federal and state environmental laws and regulations, long and short-term effectiveness, reduction of toxicity, mobility and volume through treatment, cost, implementability, and state and community acceptance.

PURITY OIL SALES SUPERFUND SITE

EPA TO COMPLETE ENVIRONMENTAL INVESTIGATION

FRESNO, CALIFORNIA JUNE 1987

In the coming months, the U.S. Environmental Protection Agency (EPA) will be completing in-depth investigations of soil and ***ground-water**** *contamination at the Purity Oil Sales Superfund site in Fresno. The investigation will lead to a decision on what further measures are needed to protect public health and the environment. This fact sheet describes the work EPA plans to conduct this summer, and discusses the Federal* ***Superfund*** *program under which this site investigation and cleanup effort is being performed.*



Site History

From 1934 until the mid-1970's, the Purity Oil Sales Company reprocessed waste oil from gas stations, car dealerships, and other sources. The oily sludges from this reprocessing activity were disposed in pits that covered a large part of the 6.86 acre site. Investigations conducted so far by state and federal agencies have shown that the soil at the site is contaminated with **polychlorinated biphenyls** (PCB), lead, copper, zinc, and various **volatile organic chemicals**. Ground water beneath the site is contaminated with organic and **inorganic chemicals** including lead, copper, chromium, arsenic, mercury, and benzene.

The State of California discovered and had primary responsibility for investigating site contamination from 1980 to 1986. In 1980, the **California Department of Health Services** (DHS) discovered lead and PCB contamination of soil at the site. Also in 1980, the **Central Valley Regional Water Quality Control Board (Regional Board)** sampled surface water from the North Central Canal, which runs along the south border of the site. The canal was not contaminated at that time, nor has it shown contamination in more recent testing. In 1981, the Regional Board sampled ground water north of the site and found low levels of organic compounds. No drinking water wells in the area are contaminated. In February 1982, EPA and DHS installed **monitoring wells** on the site to further test for groundwater contamination. The air near the site also was tested for contamination. In July 1982, DHS collected air samples which indicated that the air was not contaminated.

In 1984, DHS released a draft Remedial Investigation report. The report made public DHS' findings that open oil ponds at the Purity site were leaking and causing contamination of soil and ground water beneath the site. From February to May 1985, EPA removed contaminated soil from these open ponds and covered them.

* Boldface words are defined in more detail in the glossary on page 4